

Notice of Allowability

Application No.

09/313,058

Examiner

Xu Mei

Applicant(s)

AYLWARD ET AL.

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to interview dated 08/16/2005.
2. ☒ The allowed claim(s) is/are 1-21.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 05/23/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 2005/02/1
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Xu Mei
Primary Examiner
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1. An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the Issue Fee.

2. Authorization for this Examiner's Amendment was given in a telephone interview with Mr. C. Hieken on 10/20/2005.

3. In the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

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Listing of Claims:

1. (previously presented) A method for processing multi-channel audio signals comprising a plurality of channels, the method comprising:

determining a degree of correlation between two of the plurality of channels, the degree of correlation being related to a waveform similarity between the two of the plurality of channels;

responsive to a determining that said two of the plurality of channels are correlated, normalizing said two of the plurality of channels according to a first normalization mode; and

responsive to a determining that said two of the plurality of channels are uncorrelated, normalizing said two of the plurality of channels according to a second normalization mode.

2. (previously presented) A method for processing multi-channel audio signals in accordance with claim 1, wherein said first normalization mode is a differential mode.

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3. (previously presented) A method for processing multi-channel audio signals in accordance with claim 2, further comprising determining the phase relationship of said two of the plurality of channels.

4. (previously presented) A method for processing multi-channel audio signals in accordance with claim 3, responsive to a determining that said two of the plurality of channels are substantially out of phase, said differential mode is difference signal dominant.

5. (previously presented) A method for processing multi-channel audio signals in accordance with claim 3, responsive to a determining that said two of the plurality of channels are substantially in phase, said differential mode is sum signal dominant.

6. (original) A method for processing multi-channel audio signals in accordance with claim 1, wherein said second normalization mode is a common mode.

7. (previously presented) A method for processing multi-channel audio signals in accordance with claim 6, further comprising the step of determining an absolute value of a sum signal of said two of the plurality of channels and an

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absolute value of a difference signal of said two of the plurality of channels.

8. (original) A method for processing multi-channel audio signals in accordance with claim 7, responsive to a determining that said absolute value of said sum signal is greater than said absolute value of said difference signal, said common mode is sum signal dominant.

9. (original) A method for processing multi-channel audio signals in accordance with claim 7, responsive to a determining that said absolute value of said difference signal is greater than said absolute value of said sum signal, said common mode is difference signal dominant.

10. (previously presented) A method for processing multi-channel audio signals comprising a plurality of channels, the method comprising:

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determining a degree of correlation between two of the plurality of channels, the degree of correlation being related to a waveform similarity between the two of the plurality of channels; and

responsive to a determining that said two of the plurality of channels are partially correlated and partially uncorrelated, processing said two of the plurality of channels according to a combination of a first normalization mode and a second normalization mode.

11. (previously presented) A method for processing multi-channel audio signals in accordance with claim 10, wherein said first normalization mode is a differential mode.

12. (previously presented) A method for processing multi-channel audio signals in accordance with claim 10, wherein said second normalization mode is a common mode.

13. (previously presented) A method for processing multi-channel audio signals in accordance with claim 10, wherein said combination is a linearly weighted combination of said first normalization mode and said second normalization mode.

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14. (previously presented) A method for processing multi-channel audio signals in accordance with claim 13, wherein said first normalization mode is a differential mode and said second normalization mode is a common mode.

15. (currently amended) A method for decoding an encoded multi-channel audio signal comprising a plurality of channels, the method comprising:

determining a degree of correlation between a first channel and a second channel in the plurality of channels, the degree of correlation being related to a waveform similarity between the first channel and the second channel; and

responsive to a determining that said first and second channels are correlated

processing said first channel and said second channel according to a first normalization mode ~~and said second channel~~

responding to a determining that said first and second channels are uncorrelated normalizing said first and second

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channels according to a second normalization mode to produce a third channel and a fourth channel.

16. (previously presented) A method for decoding an encoded multi-channel audio signal in accordance with claim 15, wherein responsive to a determining that said first channel and said second channel are substantially uncorrelated, said third channel and said fourth channel are substantially uncorrelated.

17. (previously presented) A method for decoding an encoded multi-channel audio signal in accordance with claim 15, wherein responsive to a determining that said first channel and said second channel are substantially correlated, said third channel and said fourth channel are substantially correlated.

18. (original) A method for decoding an encoded multi-channel audio signal in accordance with claim 15, further comprising determining an absolute value of a sum of said first channel and said second channel.

19. (original) A method for decoding an encoded multi-channel audio signal in accordance with claim 18, wherein, responsive to said absolute value of said sum signal being greater than said absolute value of said difference signal,

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said third channel and said fourth channel are substantially correlated.

20. (previously presented) A method for decoding an encoded multi-channel audio signal in accordance with claim 18, wherein, responsive to said absolute value of said difference signal being greater than said absolute value of said sum signal, said third channel and said fourth channel are substantially uncorrelated.

21. (previously presented) An apparatus for processing multi-channel audio signals comprising a plurality of channels, comprising:

an input characteristics determiner for determining a degree of correlation between two of the plurality of channels, the degree of correlation being related to a waveform similarity between the two of the plurality of channels;

a first normalizing multiplier, coupled to said input characteristics determiner, for applying a first normalizing coefficient to a first of said two of the plurality of channels, said first normalizing coefficient being responsive to said degree of correlation; and

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a second normalizing multiplier, coupled to said input characteristics determiner, for applying a second normalizing coefficient to a second of said two of the plurality of channels, said second normalizing coefficient being responsive to said degree of correlation.

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4. The following is an Examiner's Statement of Reasons for Allowance:

During the course of the interview of August 16, 2005, the reference of Karagosian et al used in the previous rejection dated 05/19/2005 was examined and explained that the reference, in addition to failing to disclose determining a degree of correlation between two of the plurality of channels related to a waveform similarity between the two of the plurality of channels, disclosed normalizing **before** any detecting whereas the claimed invention called for responsive to a determining that the two of the plurality of channels are correlated and uncorrelated normalizing the two of the plurality of channels according to first and second normalization modes respectively. And was agreed to amend claim 15 to clearly include this feature as in the amendment to 15 above.

And the Karagosian reference also fails to show the different normalization modes or normalizing multiplier with different normalizing coefficients according the discussion in the specification (not the 3 modes of operation as indicated by Karagosian et al) in response to the determination of the correlation degree of the waveform similarity.

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Additional search was conducted with the understanding set forth above. No pertinent prior art was found and therefore, all the claims are deemed allowable over prior art of record.


5. Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably accompany the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xu Mei whose telephone number is 571-272-7523. The examiner can normally be reached on Monday-Friday (9:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Xu Mei
Primary Examiner
Art Unit 2644
10/21/2005